

Amendments to the claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of claims:

Claims 1 - 9 (canceled)

Claim 10 (currently amended): An optical immersion probe comprising:

- a) a cylindrical probe tip comprising a cylinder having a first and a second openings at first and second ends, and threads on its interior surface, wherein the diameter of said first opening is less than the inner diameter of the cylinder between said first opening and said second opening;
- b) a first gasket seated inside said probe tip at said first opening such that the opening of said gasket is aligned with said first opening of said probe tip;
- c) a spherical lens disposed within said cylindrical probe tip such that it is on top of, in contact with, and centrally aligned with, said gasket;
- d) a second gasket seated inside said probe tip on top of and in contact with said spherical lens; and

e) a fastener cylinder having proximal and distal ends and threads on its exterior surface wherein said fastener is threaded into said cylindrical probe tip such that said proximal end contacts said second gasket;

Claim 11 (currently amended): The optical immersion probe of claim 10 wherein said cylinder is comprised of a material ~~chosen~~ selected from the group consisting of metals, alloys, plastics, ceramics, composites, and glass.

Claim 12 (previously presented): The optical immersion probe of claim 11 wherein said cylinder is comprised of a metal alloy.

Claim 13 (currently amended): The optical immersion probe of claim 11 wherein said spherical lens is comprised of a material ~~chosen~~ selected from the group consisting of glass, doped glass, sapphire, diamond, ruby, zinc selenide, potassium bromide crystal and sodium chloride crystal.

Claim 14 (previously presented): The optical immersion probe of claim 13 wherein said lens is comprised of sapphire.

Claim 15 (previously presented): The optical immersion probe of claim 10 further comprising an instrument interface at said second end of said cylindrical probe tip.

Claim 16 (previously presented): The optical immersion probe of claim 10 further comprising a probe tube having first and second ends and threads disposed on said first end, wherein said probe tube is threaded into said cylindrical probe tip.

Claim 17 (previously presented): The optical immersion probe of claim 16 further comprising a seal between said cylindrical probe tip and said probe tube.

Claim 18 (currently amended): The optical immersion probe of claim 17 further comprising an instrument interface at said second end of said probe tube.

Claim 19 (currently amended): The optical immersion probe of claim 18 wherein said seal is ~~chosen~~ selected from the group consisting of a weld, a braise, adhesive, and a gasket.

Claim 20 (previously presented): The optical immersion probe of claim 19 wherein said seal is a gasket.

Claim 21 (previously presented): The optical immersion probe of claim 20 wherein said seal is an o-ring.

Claim 22 (currently amended): The optical immersion probe of claim 16 wherein said interior surface at said first opening of said cylindrical probe tip is

~~chosen~~ selected from the group consisting of a chamfer, a slant, a bevel a round and a square.

Claim 23 (previously presented): The optical immersion probe of claim 16 wherein the shape of said fastener cylinder at its proximal end is a chamfer, a bevel, a slant, a round or a square.

Claim 24 (previously presented): The optical immersion probe of claim 10 wherein said fastener further comprises two notches cut into said second end such that said notches are on opposite sides of said fastener cylinder.

Claim 25 (previously presented): The optical immersion probe of claim 10 wherein said gasket is an o-ring.

Claim 26 (previously presented): An optical immersion probe comprising:

- a) a cylindrical probe tip having a first and a second opening at first and second ends, and threads on its interior surface, wherein the diameter of said first opening is less than the inner diameter of the cylinder;
- b) a first gasket seated inside said probe tip at said first opening such that the opening of said gasket is aligned with said first opening of said probe tip;

c) a spherical lens disposed within said probe tip such that it is on top of, in contact with, and centrally aligned with, said gasket;

d) a second gasket seated inside said probe tip on top of and in contact with said spherical lens;

c) a fastener cylinder having proximal and distal ends and threads on its exterior surface wherein said fastener is threaded into said cylindrical probe tip such that said proximal end contacts said second gasket; and

d) a probe tube having first and second ends and threads disposed on said first end, wherein said threads are mated with the threads on said interior surface of said cylindrical probe tip.

Claim 27 (currently amended): The optical immersion probe of claim 26 wherein said spherical lens is comprised of a material ~~chosen~~ selected from the group consisting of glass, doped glass, sapphire, diamond, ruby, zinc selenide, potassium bromide crystal and sodium chloride crystal.

Claim 28 (previously presented): The optical immersion probe of claim 26 further comprising a seal between said cylindrical probe tip and said probe tube.

Claim 29 (currently amended): The optical immersion probe of claim 28
wherein said seal is ~~chosen~~ selected from the group consisting of a weld, a braise,
adhesive, ~~or~~ and a gasket.

Claim 30 (previously presented): The optical immersion probe of claim 29
wherein said seal is a gasket.

Claim 31 (previously presented): The optical immersion probe of claim 29
wherein said seal is an o-ring.

Claim 32 (currently amended): The optical immersion probe of claim 26 further
comprising ~~and~~ instrument interface at said second end of said probe tube.

Claim 33 (currently amended): The optical immersion probe of claim 26
wherein said interior surface at said first opening of said cylindrical probe tip is
~~chosen~~ selected from the group consisting of a chamfer, a slant, a bevel a round
and a square.

Claim 34 (previously presented): The optical immersion probe of claim 26
wherein the shape of said fastener cylinder at its proximal end is a chamfer, a
bevel, a slant, a round or a square.

Claim 35 (previously presented): The method of claim 26 wherein said fastener further comprises two notches cut into said second end such that said notches are on opposite sides of said fastener cylinder.

Claim 36 (previously presented): The optical immersion probe of claim 30 wherein said seal is an o-ring.

Claim 37 (previously presented): An optical immersion probe comprising:

- a) a cylindrical probe tip having a first and a second openings at first and second ends, and threads on its interior surface, wherein said probe tip is chamfered on its interior surface at said first opening such that the inner diameter at said first opening is less than the inner diameter of the cylinder;
- b) a first o-ring seated inside said probe tip at said first opening such that the opening of said gasket is aligned with said first opening of said probe tip;
- c) a spherical lens disposed within said probe tip such that it is seated on top of, and centrally aligned with, said o-ring;
- d) a second o-ring seated inside of said probe tip on top of said spherical lens;

e) a fastener cylinder having proximal and distal ends and threads on its exterior surface, wherein said fastener cylinder is chamfered inward at said proximal end, said fastener is threaded into said probe tip such that said proximal end contacts said second gasket;

f) a probe tube having first and second ends and threads disposed on said first end, wherein said probe tube is threaded into said cylindrical probe tip; and

g) an o-ring seated between said probe tube and said cylindrical probe tip.

Claim 38 (currently amended): The optical immersion probe of claim 37 wherein said cylinder is comprised of a material ~~chosen~~ selected from the group consisting of metals, alloys, plastics, ceramics, composites, and glass.

Claim 39 (previously presented): The optical immersion probe of claim 36 wherein said cylinder is comprised of a metal alloy.

Claim 40 (currently amended): The optical immersion probe of claim 36 wherein said spherical lens is comprised of a material ~~chosen~~ selected from the group consisting of glass, doped glass, sapphire, diamond, ruby, zinc selenide, potassium bromide crystal and sodium chloride crystal.

Claim 41 (previously presented): The optical immersion probe of claim 40 wherein said lens is comprised of sapphire.

Claim 42 (previously presented): The optical immersion probe of claim 37 further comprising an instrument interface at said second end of said cylindrical probe tube.

Claim 43 (previously presented): The optical immersion probe of claim 37 wherein said fastener further comprises two notches cut into said second end such that said notches are on opposite sides of said fastener cylinder.

Claim 44 (new): The optical immersion probe of claim 10 wherein the distance between the apex of said spherical lens and the focal point of said spherical lens is selected from the range of about 50 μm to about 200 μm .

Claim 45 (new): The optical immersion probe of claim 10 further comprising a Raman spectrometer in optical communication with said optical immersion probe.